STS-108 RUN 2

*2944547 *

PROCESSING OPERATIONS CONTROL OMI PLANNING SHEET

Wad Number	SITE	Elem CD	End Item	
S6444-J02-R02	LCC	V	105 FLT: 017	DATE: 11/30/2001 TIME: 12:44:46

Title: SSV ICE AND DEBRIS ASSESSMENT

Sub Element/Zone: 30

DEC 17 01

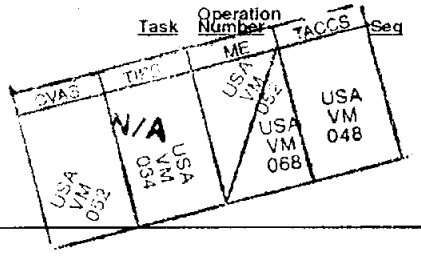
Project Work Order No.	Hazard:	SFOC Safety	
	☒ Yes ☐ No	N/A WC 150 USA NOV 30 '01	☐ Local Copy ☒ Firing Room Copy

Authorizing Document	Material & Equipment:	MICR Req'd	OMRS:
ORB517	☒ Yes ☐ No	☐ Yes ☐ No	☒ Yes ☐ No

PERFORM THE FOLLOWING:

Pre-Ops Setups

Task	Operation Number	Seq	Steps	Task	Operation Number	Seq	Steps



OPS Support

Task	Operation Number	Seq	Steps	Task	Operation Number	Seq	Steps

Operating Instructions

Task	Seq	Steps	Task	Seq	Steps
	010			080	
	015			090	
	020			100	
	030			110	
	040			120	
	050			130	
	060			140	
	070			145	

USA VM 005

USA VM 075

Post Ops

Task	Operation Number	Seq	Steps

Appendices

Task	Seq
N/A	

Subtask WAD's

N/A

Planner	Ext	QC Closure	Date	Page
LISA RUTKOWSKI WC 150 USA NOV 30 '01	0746	BPC 974	DEC 17 01	1 OF 2

USA 52-82 Rev 05-99 (Flow)

*2944547 *

PROCESSING OPERATIONS CONTROL OMI PLANNING SHEET

Wad Number	SITE	Elem CD	End Item	
S6444-J02-R02	LCC	V	105 FLT: 017	DATE: 11/30/2001 TIME: 12:44:46

Title: SSV ICE AND DEBRIS ASSESSMENT

Sub Element/Zone: 30

Project Work Order No.	Hazard:	SFOC Safety	
	☒ Yes ☐ No	N/A WC 150 USA	☐ Local Copy ☒ Firing Room Copy

Authorizing Document	Material & Equipment:	MICR Req'd	OMRS:
ORB517	☒ Yes ☐ No	☐ Yes ☐ No	☒ Yes ☐ No

PERFORM THE FOLLOWING:

Pre-Ops Setups

Task	Operation Number	Seq	Steps	Task	Operation Number	Seq	Steps

OPS Support

Task	Operation Number	Seq	Steps	Task	Operation Number	Seq	Steps

Operating Instructions

Task	Seq	Steps	Task	Seq	Steps
	150				

Post Ops

Task	Operation Number	Seq	Steps

Appendices

Task	Seq
N/A	

Subtask WAD's

Planner		Ext	QC Closure	Date	Page
LISA RUTKOWSKI	WC 150 USA	0746		DEC 17 '01	2 OF 2

USA 52-82 Rev 85-99 (Flow)

OMI TASK CLOSEOUT CHECKLIST

OMI No.	Run No.	Task Control No. (TCN)
S6444 J-02	2	2944547-F/R

Start Date	Completion Date	Closure Date
12/3/01	12/5/01	12/10/01

		QC/Eng.	Date
1.	Deviation Index: Verify total number of deviations agree with index. Verify entry is correct into OMI.	ET 01	12/10/01
2.	Constraints List: Verify all constraints are accepted by QC or waivered by Engineering. Verify that constraints list is complete and closed. SUBTASKED TO 50007 R. Steele ET 12/10/01	N/A	N/A
3.	IPR's: Verify that all IPR's are closed or upgraded to problem reports or dispositioned as no constraint to OMI closure and incorporated in central IPR system and a copy of the central IPR sort attached.	S&C N/A	DEC 17 '01
4.	Verify that material and equipment requirement list enclosed (if applicable).	N/A	N/A
5.	OMI: Verify that all pages or verification sheets are completed, stamped, and dated in the lower left/right hand corners.	ET 01	12/10/01
6.	OMI: Verify that all miscellaneous documents/procedures have sequence number referenced and stamped; e.g., photos, sample results, etc.	ET 01	12/10/01
7.	Planned task/OMI satisfactorily completed. OPR: R. Steele ET 12/10/01	ET 01	12/10/01
8.	LSS review prior to closure for CIL OMI's. MMC N/A Thiokol N/A		

KSC FORM 4-471 (REV. 11/94) PREVIOUS EDITIONS ARE OBSOLETE

09-01-2001
APPROVED

OMI S6444 J02
APPROVED

SSV ICE AND DEBRIS ASSESSMENT

Element/End Item: **ALL**
Flow/Usage: **ET-103 & SUBS**
Facility: **LC 39**
Design Center Concurrence: **MSFC/JSC**
Category: **B**
OPR: **ETM**
TTL ORG: **SE**

This document contains HAZARDOUS operations.

KENNEDY SPACE CENTER - SPACE TRANSPORTATION SYSTEM

Table of Contents:

1.0 INFORMATION

1.1 Objective

Provide necessary tasks that document, monitor and evaluate ice and debris conditions to eliminate or minimize debris concerns of the integrated SSV during ET tanking, FRF, launch, and associated detanking.

Description

1. This OMI is performed as subtask to S0007/S0014/S0037.

2. This OMI provides documentation of ice/debris activities:

   A. Pre-launch icing briefing

   B. Pre-launch debris inspection

   C. Countdown - Based timeline evaluation monitoring of ET TPS surfaces using OTV

   D. OTV monitoring of seal/flange areas for cryogenic leakage

   E. SSV OTV monitoring for debris conditions during countdown

   F. Cryogenic replenish inspection for evaluation of SSV and facility debris concerns or anomalies

   G. Evaluation of concerns/anomalies in the event of ET detanking

   H. Review of engineering film data for SSME ignition, launch, ascent, ET separation, and orbiter landing.

3. Orbiter landing debris information is contained in the NASA publication for Ice and Debris Assessment. That report is referenced in this OMI for continuity of debris data.

1.2 Special Instructions All Operations

1. This OMI is run as a subtask to OMI's S0007, S0014, and S0037. All PAD clearing and controlled access operations will be performed per those OMI's.

2. Constraints will be statused by controlling OMI's S0007/S0014/S0037.

3. The OTV camera numbering scheme for PAD A/B is 0XX/1XX.

4. Task Team Leader assignment: NASA PH-H is TTL for L-20 Hour Walkdown, Final Inspection, and Post Launch/Drain Walkdown. ETM is TTL for all other operations.

5. From time stable replenish mode starts until start of final SCAN, scanning with individual cameras should be performed approximately once per hour.

6. Cameras 061/161, 063/163, and 070/170 may be released to NASA select with CICE concurrence.

7. All personnel participating in final inspection and post drain walkdown shall be current in following training:

   A. Emergency PAD egress

   B. Fire fighting

   C. ELSA

8. Milestones:

   A. MLP portion of post launch walkdown commences at approximately T + 1 hours.

   B. PAD acreage portion of the post launch walkdown commences at approximately T + 2 hours. (may be deferred until preferred daylight hours.)

   C. Post drain walkdown commences at approximately T + 4 hours after drain initiated (typically 1 1/2 hours after LH_2/LO_2 low level sensors dry).

9. Hands-on investigation required for all ET-TPS defects suspected of violating NSTS 08303 ice/debris inspection criteria.

10. From time launch scrub is declared until 1.5 hours past time LH_2/LO_2 low level sensors read dry, OTV camera scanning shall be performed approximately once per hour.

11. OTV cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171 shall be used to monitor LO_2/LH_2 tank drain operations.

12. Excessive vapors are defined as being more severe than that described in NSTS 08303 - Ice/Debris Inspection Criteria or NSTS 16007 - Launch Commit Criteria - Hazardous Gas Subsystem.

13. Quality coverage is not required for performance of this OMI. Ref SFOC-GO0007, Ice and Debris Team Operations are exempt from quality coverage. The ROR (CTIF) performs the CMQC function for all non-hazardous operations.

14. Personnel using Sony DKC-ID1 camera shall verify lithium ion battery is securely locked in the bayonet fitting and the lithium button battery door is securely locked and taped in place.

15. Verify camera flash is deactivated.

16. Personnel using Kodak DC 50/120 camera shall verify alkaline batteries are properly installed.

17. Personnel using digital cameras shall not operate in H_2 leak or O_2 rich environment (23 percent or greater).

18. Personnel using the Sony MVC-FD91 camera shall verify the lithium ion battery is securely locked and the battery door is locked closed. Personnel shall verify that both battery doors (lithium ion and lithium button) are closed and taped shut.

19. Personnel shall verify that cameras and equipment are securely tethered when at the PAD while the SSV is present.

1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)
No.	Title				
10	Support Preparations	STM/ FR2	ETM	N	0.2
15	IR Camera Setup	PH-H/ NA	ETM	N	4.0
20	Ice Prediction Briefing	SE/ NA	ETM	N	0.5
30	Pre-launch Walkdown	SE/ NA	ETM	N	2.0
40	Ice Frost Debris Console Initial Configuration Setup	SE/ FR2	ETM	N	3.0
50	SSV Debris Assessment	SE/ FR2	ETM	N	18.0
60	Group 1 Monitoring LO2 Chill Down Thru T-0	SE/ FR2	ETM	N	15.0
70	Group 2 Monitoring - LH2 Chill Down Thru T-0	SE/ FR2	ETM	N	15.0
80	Final Inspection	SE/ FR2	ETM	Y	3.0
90	LO2/LH2 Drain Monitoring	SE/ FR2	ETM	N	4.0
100	Console Securing	SE/ FR2	ETM	N	0.5
110	Summary Tape	SE/ FR2	ETM	N	18.0
120	Post Drain Walkdown	SE/ NA	ETM	Y	2.0
130	Post Launch Walkdown	SE/ NA	ETM	Y	3.0
140	Film Review	SE/ NA	ETM	N	15.0
145	IR Camera Removal	PH-H/ NA	ETM	N	2.0
150	Final Report	SE/ NA	ETM	N	0.5

2.0 SAFETY INFORMATION

2.1 Hazards

	Operation
1. Working at unprotected heights.	
2. Walkdown at PAD while SSV is in stable replenish mode.	

2.2 Safety Requirements

	Operation
1. If lightning activity is forecast to be within 5 miles of launch PAD, CTC and SFOC safety shall implement provisions of adverse/severe weather and lightning policy contained in GSOP 5400 Ground Safety Operations Procedures.	
2. There are no safing/shutdown or evacuation steps required in this OMI.	
3. Hazardous operations within this subtask OMI will not be started until safety concurrence to proceed has been given per the integrated OMI controlling this subtask.	

2.4 Reference Safety Documentation

Number	Rev	Title
KHB 1710.2	LI	KSC Safety Practices Handbook
GSOP 5400	LI	Ground Safety Operating Procedures

3.0 STAGING REQUIREMENTS

3.1 Referenced Engineering Documentation

3.1.2 Documents

OPERATION 120

Document No.	Rev	Title
NSTS 08303	(LI)	NSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA

3.2 Parts, Materials, Equipment, and Special Tools

3.2.5 Shop Support Materials

OPERATION 15

Part No./Find No.	Nomenclature	Qty	Unit
8305-00-519-3144	Rymple cloth	2	roll
6810-00-543-7915	Isopropyl alcohol	8	ounces

OPERATION 145

Part No./Find No.	Nomenclature	Qty	Unit
8305-00-519-3144	Rymple cloth	2	roll
6810-00-543-7915	Isopropyl alcohol	8	ounces
6505-00-133-8025	Petroleum Jelly, Vaseline (or equivalent)	1	tube/jar

3.2.8 Personal Protective Equipment

OPERATION 15	**Nomenclature**
	N-Dex nitril gloves
	chemical splash goggles
	face shield
OPERATION 30	**Nomenclature**
	safety harness
	lanyard
OPERATION 80	**Nomenclature**
	safety harness
	lanyard
	Nomex coveralls with gloves and hoods
	ELSA
OPERATION 120	**Nomenclature**
	safety harness
	lanyard
	hardhats
	flame retardant coveralls
OPERATION 130	**Nomenclature**
	safety harness
	lanyard
	hardhats
	flame retardant coveralls
OPERATION 145	**Nomenclature**
	N-Dex nitril gloves
	chemical splash goggles
	face shield

4.0 PLANNING REQUIREMENTS

OIR Required Yes [ ], No [X]

4.3 LPS Requirements

4.3.1 Computer Systems

PC GOAL
CCMS Configuration
CDS
CMS

4.4 Support Services, Commodities, and Equipment

4.4.2 Communications

(Per controlling OMI S0007, S0014 or S0037 unless specified otherwise)

4.4.3 OTV

(Per controlling OMI S0007, S0014 or S0037 unless specified otherwise)

OTV Cameras required: 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171

OTV Cameras to be recorded: 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171

4.4.4 Countdown Display/Status

Display Required	Bldg	Room	Operation Time
Timing	LCC	FR2	Duration of Test
Countdown and GMT	LCC	FR2	Duration of Test

4.4.8 Services

Service/Special Requirements	Location	Purpose
SFOC Safety	LC-39 A&B	Safety Support
ELSA'S (8)	LC-39 A&B	Inspection Team Use
Radio Net 105	LC-39 A&B	Inspection Team Use

4.4.12 Propellants, Gases and Chemicals

Commodity	Spec No.	Quantity	Rcvr	Location	Minimum Press	Delivery Time
GN_2	SES-0073 -6.3-5	Min 750 Cu ft	PH-H 861-3645	Pad 39B Camera Site 2	3000 PSI	1 week prior to T-0

5.0 CONFIGURATION ACCOUNTING AND VERIFICATION

5.1 Specific OMRS Requirements Satisfied by this TOP

OMRS NC.	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)
S00E00.021	ET TPS MON DURING DETANK TAF;C	90-005
S00E00.031	POST DETANK ET TPS INSPECT TAF;C	120-002
S00FA0.900	PRELAUNCH WEATHER BRIEFING (L-1 DAY) VAF1-90	20-001
S00FB0.005 (1)	ET TPS SURFACE MONITORING T23,27-29,31-999	50-022
S00FB0.350 (1)	MONITOR GO2 VENT HOOD VAF1-90	50-024
S00FB0.360 (1)	MONITOR ET/ORB MPS FOR LEAKAGE VAF1-90	50-022
S00L00.150	HIGH WIND ET NOSE INSPECTION SAF;C	50-020
S00U00.010 (1)	POST LAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-999	130-002
S00U00.011 (1)	ENGR REVIEW & ANALYSIS OF LAUNCH FILM SAF1-999	140-001
S00U00.020-A (1)	AN ENGINEERING PAD INSPECTION TEAM SAF1-999	80-002
S00U00.020-C (1)	INSPECT ORBITER AFT ENGINE SAF1-999	80-002
S00U00.020-D (1)	INFRARED SURVEILLANCE SAF1-999	80-002
S00U00.030 (1)	PRELAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-999	30-001

5.5 List of References

OPERATION 20

Reference No.	Rev	Title
NSTS 16007	(LI)	NSTS Program Launch Commit Criteria - Hazardous Gas Subsystem and Appendix F

OPERATION 30

Reference No.	Rev	Title
80901019010	(LI)	ET Post Build Acceptance and In-Process Rework Requirements Manual - Offsite

OPERATION 40

Reference No.	Rev	Title
79K24576	(LI)	OTV System Installation, LC 39, Pad A
79K24522	(LI)	OTV System Installation, LC 39, Pad B

OPERATION 50

Reference No.	Rev	Title
SPI SP-519	(LI)	OMI and OM Implementation
SFOC GO0007	(LI)	Quality Planning Requirements Document (QPRD)

OPERATION 10 Support Preparations

Shop: **STM**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.2**

10-1 **STM** **JYVO** **138**

Verify PAD OTV system is configured to support S6444 as scheduled.

Support: COMM

10-2 **STM** **JSTC** **111**
JSTC ***SCB** **114**

Verify eight 10-minute ELSA's available at complex J for use by Final Inspection Team (ref S0007/S0014/S0037).

Support: LS

10-3 **STM** **TBC** **136**

Operation - Support Preparations complete.

*** End of Operation **10** ***

12/3/01

OPERATION 15 IR Camera Setup

Shop: **PH-H**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **4.0**

WARNING

Hard hats required on the Pad when SSV is not present.

CAUTION

Exercise care to avoid dropping equipment, fasteners, etc from RSS Roof to prevent damage to equipment or injury to personnel. All tools must be tethered.

NOTE

IR Camera installation at RSS Roof site may be not performed if IR Camera already installed or if technical concerns preclude such.

15-1 **Install** IR camera at RSS Roof Site as follows.

1. **Rotate** camera housing back cover to open position by removing bolts with flat washers (20 pl). **Retain** bolts/washers for reinstallation.

2. **Remove** camera housing front cover by removing fasteners (2 pl). **Reinstall** fasteners after cover removal. **Retain** cover for reinstallation after IR Camera Unit removal.

3. **Install** IR Camera Unit into camera housing. **Secure** IR Camera Unit in housing by locking spring pin at lower, left.

ET 01
12/3/01

WARNING

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

CAUTION

Do NOT allow opened back cover to exert undue force on cables once cables have been connected.

4. **Connect:**
   - OTV coaxial cable
   - Pan & tilt cable
   - Controller cable
   - Power cable

5. **Rotate** camera housing back cover into closed position. **Secure** back cover by installing bolts/flat washers (20 pl). **Tighten** bolts wrench tight.

ET Of 12/3/01

WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Ensure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear **N-Dex nitril gloves** and **chemical splash goggles** . When working at eye level or above wear a **face shield** over goggles.

WS002.a 05-22-01

6. **Clean** IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl alcohol .

7. **Perform** functional checkout of IR Camera Unit using local controller if required at Task Team Leader (TTL) discretion.

Sub Step Not Performed: NA

NASA PH-H NA Date N\A

USA ETM NA Date N\A

(1) ME 11

Not Performed: GMW OR 14

(1) ME 10 12-4-01 12-4-01

ET 01
12/3/01

NOTE

IR Camera installation at Camera Site 2 may be not performed if IR Camera already installed or if technical concerns preclude such.

15-2 **Install** IR camera at Camera Site 2 as follows.

1. **Rotate** camera housing back cover to open position by removing eight ea bolts using Phillips screwdriver. **Retain** bolts/washers for reinstallation.

2. **Remove** camera housing front cover by removing securing bolt(s). **Reinstall** bolt(s) after cover removal. **Retain** cover for reinstallation after IR Camera Unit removal.

3. **Install** IR Camera Unit into camera housing. **Secure** IR Camera Unit in housing by tightening set screw(s) wrench tight at lower left/right.

WARNING

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

4. **Connect:**
   - OTV coaxial cable
   - Pan & tilt cable
   - Controller cable (2 pl)
   - Power cable

5. **Rotate** camera housing back cover into closed position. **Secure** back cover by installing bolts (8 pl). **Tighten** bolts using Phillips screwdriver.

ET 01
12/3/01

WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Ensure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear **N-Dex nitril gloves** and **chemical splash goggles** . When working at eye level or above wear a **face shield** over goggles.

WS002.a 05-22-01

6. **Clean** IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl alcohol .

7. **Perform** functional checkout of IR Camera Unit using local controller if required at Task Team Leader (TTL) discretion.

Sub Step Not Performed: N\A

NASA PH-H NA Date N\A

USA ETM NA Date N\A

Not Performed: CMW
12-4-01

*** End of Operation **15** ***

ET 01
12/3/01

OPERATION 20 Ice Prediction Briefing

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.5**

> **NOTE**
> Ref: NSTS 16007 (LI) NSTS Program Launch Commit Criteria - Hazardous Gas Subsystem and Appendix F defines the ET No-Ice Zone.

20-1 **CICE**

Conduct L-1 day ice prediction briefing with launch director. OLIN

PH-HZ

PH-H Signature Armando Oliva 12/4/01

OMRSD S00FA0.900 USA 070

20-2 Operation - Ice Prediction Briefing complete.

*** End of Operation **20** ***

ET 01
12/4/01

OPERATION 30 Pre-launch Walkdown

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **PAD**
Hazard (Y/N): **N**
Duration (Hrs): **2.0**

WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

NOTE

This operation is performed at approximately L-20 hours. When this operation is performed in support of a 24 hour scrub turnaround, the preceding launch scrub post drain walkdown and this pre-launch walkdown may be performed concurrently.

Inspections may also be performed from the RSS, GO_2 Vent Arm (GVA), -Y OWP, or +Y OWP if still extended and accessible.

Ref: 80901019010 (LI) ET Post Build Acceptance and In-Process Rework Requirements Manual - Offsite

NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are optional walkdown participants.

NASA Engr	(4)
SFOC Engr	(2)
LMSSC - LSS	(1)
Boeing - LSS	(1)
SRB ELE	(1)
Thiokol - LSS	(1)

ET 01

12/3/01

30-1 Debris inspection team **perform** walkdown of SSV and MLP per following:

1. Team leader **verify** S6444 pre-test briefing complete.

2. **Assemble** following essential personnel

   NASA PH-H Engineering - 1
   SFOC ETM Engineering - 1

3. **Inspect** following areas (as a minimum) from the MLP, RSS and FSS to identify/ resolve potential debris sources.

   Areas to be inspected

   A. Launch vehicle external surfaces

   - Orbiter
   - SRB's
   - External Tank

   B. MLP surfaces

   - LH and RH SRB holddown posts
   - Deck including deck bolts, fixtures, and edge gutters
   - SSME LH and RH SRB exhaust openings, and sound suppression (SS) troughs
   - TSM's and camera housings

4. Ref Table 30-1, **document** and SIM Photograph SSV and Launch PAD Configuration.

   Description: Pre launch walkdown.

   OMRSD S00U00.030-1

USA
VM
070

ET
01

12/4/01

30-2 **Record** all facility discrepancies in S0007. Submit copy to PAD leader and **notify** TBC/CTC. **Verify** no constraints to continue.

PH-H _____ Date 12/4/01

ETM _____ Date 12/4/01
Randy Seale

30-3 Operation - Pre-launch Walkdown complete.

ET
01
12/4/01

Table 30-1 Photo Requirements for SSV and Launch Pad Configuration			
Photos from MLP			
Photo	**Camera Orientation**	**Lens**	**Notes**
ET -Z	Vertical	28 mm	
Aft Dome	Horizontal	28 mm	
Aft Dome	Horizontal	35-70 mm	
LH SRB from North	Horizontal	35-70 mm	All water troughs in view
LH SRB from North	Vertical	35-70 mm	3-4 water troughs in view
LH SRB from East	Vertical	35-70 mm	
RH SRB from North	Horizontal	35-70 mm	All water troughs in view
RH SRB from North	Vertical	35-70 mm	3-4 water troughs in view
RH SRB from West	Vertical	35-70 mm	
SRB Heater Elec T-0	Horizontal	35-70 mm	Foam intrusion; May need flash
North HDP	Vertical	35-70 mm	Representative view
South HDP	Vertical	35-70 mm	Representative view
TSM T-0 LH_2	Vertical	35-70 mm	Flash needed
TSM T-0 LO_2	Vertical	35-70 mm	Flash needed
Orbiter Left & Right Wing	Vertical	35-70 mm	From below ET (1 Photo each wing)

ET
01

12/21/01

135 Ft Level Photos

Photo	Camera Orientation	Lens	Notes
LO_2 UMB	Vertical	35-70 mm	From OWP usually during T5401
LH_2 UMB	Vertical	35-70 mm	From OWP usually during T5401

215 Ft Level Photos

Photo	Camera Orientation	Lens	Notes
ET surfaces from FSS	Vertical	35-70 mm	
LH SRB Frustrum and FWD skirt	Vertical	35-70 mm	
RH SRB Frustrum and FWD skirt	Vertical	35-70 mm	
Jack Pad C/O's	Horizontal	35-70 mm	Flash needed (1 each C/O)
LO_2 Ogive Cable Tray	Vertical	35-70 mm	From RSS roof

255 Ft Level Photos

Photo	Camera Orientation	Lens	Notes
ET surfaces with GO_2 vent ducts in view	Vertical	35-70 mm	
GO_2 vent ducts	Horizontal	250 mm	

***** End of Table 30-2 Photo Requirements for SSV and Launch Pad Configuration**

*** End of Operation **30** ***

ET 01

OPERATION 40 Ice Frost Debris Console Initial Configuration Setup

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **3.0**

> **NOTE**
>
> The next step sets up the photo processing laptop for use in the Firing Room. This is not a constraint to set up of the console or to final inspection team operations. Network or equipment failures on the photo processing machine shall be annotated below.

40-1 **Configure** computer to perform image processing, analysis, and recording:

1. **Connect** following equipment at Ice/Frost console:
   - power cable to computer
   - "Dazzle" capture card to laptop parallel port
   - "Y" adapter to laptop PS2 port
   - keyboard to keyboard port on "Y" adapter
   - mouse to mouse port on "Y" adapter
   - monitor to laptop
2. **Insert** Xircon Network Card into Personal Computer PCMCIA port.
3. **Connect** ethernet (gray) cord to Xircon Network Card.
4. **Remove** terminator from video cable.
5. **Plug** BNC-to-RCA adapter into end of video cable.
6. **Plug** video cable into "Dazzle" DVC "video in".
7. **Power-up** Trouble Console VCR.

ET 01
12/a/01

8. **Log-on** to KSC Ground Ops. **Click-on** Start/Programs/Dazzle.

9. **Confirm** above equipment as operational and record results.

Results OPERATIONAL

ETM [signature] 12/4/01
B. Richards

NOTE

The next step verifies the setup of the infrared scanners. This is not a constraint to set up of the ice console. IR scanner condition shall be annotated below.

40-2 **Verify** IR scanner operation condition, annotate below.

RSS: OK

CS 2: OK

NOTE

The next step verifies the operation of console monitors in the Firing Room. This is not a constraint to set up of the console or to final inspection team operations. Equipment condition shall be annotated below.

40-3 **Verify** console condition by powering on monitors and tape recorders.

Monitors: OK

Tape recorders: OK

ET 01
12/4/01

NOTE

ET OTV pre-mapping/initial position of cameras may be performed in random order.

Ref: 79K24576 (LI) OTV System Installation, LC 39, Pad A and
Ref: 79K24522 (LI) OTV System Installation, LC 39, Pad B define OTV camera locations.

FOV designates field-of view. RSS and -Y OWP must be retracted for completion of pre-mapping.

Pre-mapping steps/substeps in the remainder of this operation need not be performed if supporting a scrub turnaround and if performed during a previous run.

It is preferred to record all pre-mapping scanning on a single tape. However, multiple tapes may be used when lighting/ launch countdown constraints necessitate such.

40-4 CVM1 JTV1 223

Perform OTV pre-mapping of External Tank exterior surfaces using OTV Cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, and 067/167 as follows:

- **Insert** designated pre-map tape into trouble console VCR.
- **Punch-up** camera number on trouble monitor.
- **Start** recording on pre-map tape. **Record** start time (GMT).
- **Scan** from top-to-bottom, left-to-right and right-to-left at approximately full zoom-in.
- **Stop** recording on pre-map tape. **Record** stop time (GMT).
- **Record** data in Table 40-1.
- **Repeat** with each OTV camera listed until each has been used to scan the External Tank.
- **Remove** pre-map tape from trouble console VCR.

ETM Mark Wollan WOLLAN Date 12-4-9

Not Performed: N/A

ET 01

40-5 CVM1 JTV1 223

Position OTV Cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 070/170, and 071/171 to initial positions as defined in Table 40-2.

ETM _____ Date 12-4-01

Not Performed: NA

ET 01
12/4/01

Table 40-1 ET Pre-Mapping Data — Tape # 170+170A

OTV Camera	Start Time (GMT)	Stop Time (GMT)
004 / 104 *	12:24	12:29
009 / 109	12:35	12:44
013 / 113 *	12:29	12:36
033 / 133 *	12:14	12:17
042 / 142	12:44	12:55
054 / 154 *	12:18	12:23
055 / 155	12:55	13:01
056 / 156	12:14	12:20
060 / 160 *	11:50	12:01
061 / 161 *	12:03	12:08
062 / 162 *	11:58	12:05
063 / 163	11:52	12:03
064 / 164	12:20	12:35
065 / 165	12:03	12:14
066 / 166 *	12:05	12:10
067 / 167	13:01	13:09

Notes: Two (2) Tapes were used, (* VSH TAPE 170A)

ET 01

12/4/01

Table 40-2 OTV Camera Initial Positions	
OTV Camera	**Initial Position**
004 / 104	FOV centered on GUCP
009 / 109	FOV on LH_2 Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 063/163 and 064/164.
013 / 113	Full zoom in. View SW GO_2 Vent Louver area.
033 / 133	FOV perpendicular to ET and with LO_2-to-Intertank splice at frame top and LH_2-to-Intertank splice at frame bottom. Then tilt down until XT2058 is in frame center.
042 / 142	FOV centered on Orbiter Access Arm-to-Orbiter interface.
054 / 154	FOV to encompass approximately 3 feet forward of XT2058 to 2 feet aft of XT2058. Orbiter wing and SRB should be in view at frame left.
055 / 155	Set FOV on north bridge LH_2 pipeline flange.
056 / 156	FOV with LH_2 Aft Dome in frame bottom and XT2058 in view at frame top.
060 / 160	Full zoom in. View SW GO_2 Vent Louver area.
061 / 161	Full zoom-in. Adjust FOV until ET LO_2-to-Intertank splice is centered vertically and view is perpendicular to ET. Pan right until edge of the ET comes into view. Note: LO_2 Tank may pass out-of-view.
062 / 162	Full zoom in. View NW GO_2 Vent Louver area.
063 / 163	FOV on LH_2 Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 009/109 and 064/164.
064 / 164	FOV on LH_2 Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 009/109 and 063/163.
065 / 165	Full zoom out. Set FOV on aft part of ET with frame bottom approximately 2 feet below LH_2 Aft Dome.
066 / 166	FOV perpendicular to ET with LO_2-to-Intertank splice at frame top. Then tilt down until Orbiter RH Wing/SRB intersection is in frame lower right.
067 / 167	Set FOV with LH_2 Aft Dome toward frame bottom and 2nd black ring of SRB in view.
070 / 170 071 / 171	Select down wind camera of these two as wide angle view of the SSV. Set up wind camera for close-up view of SSME's.

ET 01

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40-6 Operation - Ice Frost Debris Console Initial Configuration Setup complete.

ETM JMV **Date** 12-4-01

*** End of Operation **40** ***

ET 01
12/4/01

OPERATION 50 SSV Debris Assessment

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **18.0**

NOTE

Steps in this operation are contingent upon progression of launch countdown operations and may not be performed if countdown is terminated.

Entire Operation Not Performed: NA

NOTE

Until otherwise indicated, all times are referenced to S0007, S0014 or S0037 timelines.

No operations/steps within this subtask OMI may be performed as a stand-alone procedure. This OMI may only be performed as a subtask to S0007/S0014/S0037.

NOTE

Ref: SPI SP-519 (LI) OMI and OM Implementation and Ref: SFOC GO0007 (LI) Quality Planning Requirements Document (QPRD) , following step complies with requirements for ROR-as-CMQC function.

50-1

CTIF TBC
TBC CMQC 136

Notify TBC that CTIF will perform the CMQC function for STS 108, S6444 run 2. Request TBC notify CMQC that the ROR-as-CMQC option will be exercised for STS 108, S6444 run 2.

EF
01

12/4/01

50-2

CTC	TBC	232
TBC	CTIF	136

Perform OTV and ice/frost monitoring area setups.

ETM _____ Date 12-4-01

50-3

CTIF	TBC	136
TBC	CTC	
CTC	STM	232

Verify Operation 10- Support Preparations complete.

ETM _____ Date 12-4-01

50-4

CTIF

Verify Operation 20 - Ice Prediction Briefing and Operation 30- Pre-launch Walkdown complete.

ETM _____ Date 12-4-01

ET 01

12/4/01

50-5

CTIF	**CVM1**	**222**
	CVM1	**222**

Verify:

- All OTV cameras are on, tapes in recorder, and ready to commence OTV scanning, monitoring, and recording.
- Trouble tape recorder is ready.
- Ice Frost Debris Console Initial Configuration Setup complete.

ETM _____ Date 12-4-01

50-6

CTIF	**CICE**	**222**
	CVM1	
	CVM2	
	CIPC	
CTIF	**JYVR**	**138**
CVM1	**JTV1**	**223**
CVM2	**JTV2**	**225**

All personnel participating in OTV operations **report** test ready status.

ETM _____ Date 12-4-01

Support: COMM

ET
01
12/4/01

50-7

CTIF TBC 136
TBC CTC 232

Ice Frost Console Area Setups for OTV scanning complete.
Report readiness.

ETM _____ Date 12-4-01

Not Performed: NA

50-8

CTIF CVM1 222

From start of LO_2 chilldown until seal deflation/GO_2 vent hood retraction, **monitor** the +Y/-Y GO_2 vent seal-to-ET interface for seal fretting and continuous GO_2 escape.

OMRS S00FB0.350-1

ETM _____ Date 12-4-01

Not Performed: NA

ET 01

12/4/01

NOTE

GO_2 vent seal fretting could induce damage to ET SOFI. Continuous GO_2 venting could result in formation of ice in the no ice zone (ref NSTS 16007). Ultimate decision to lift the vent hood rests with CMEC.

50-9

CTIF TBC 136
CMEC

If +Y/-Y GO_2 vent seal fretting or continuous GO_2 escape detected from start of LO_2 chilldown until seal deflation, **notify** CMEC for GO_2 vent hood removal.

ETM N/A Date N/A

Not Performed: ME 08 12-04-01

50-10

CTIF CIPC 222

Monitor wind speed and direction from start of LO_2/LH_2 chill down through launch/scrub. CIPC **notify** CTIF if winds measured at 38 knots or greater from North +/-30 degrees as measured at 60 feet.

ETM [signature] Date 12-4-01

Not Performed: NA

ET 01
12/4/01

NOTE

Excessive vapors are defined as being more severe than those described in NSTS 08303 (LI) NSTS Program Ice/Debris Inspection Citeria or NSTS 16007 (LI) NSTS Program Launch Commit Criteria - Hazardous Gas Subsystem.

50-11

CTIF CVM1 222
CVM2

From start of LO_2/LH_2 loading until Prepressurization (LO_2 at T-2M55s and LH_2 at T-1M57s):

1. **Monitor** following ET-Orbiter MPS areas for leakage:
   - LO_2 Feedline (portion external to the Intertank)
   - LH_2 Feedline
   - LH_2 Recirculation Line
   - LH_2 Aft Dome Manhole Cover(s)
   - ET-Orbiter LO_2/LH_2 Umbilical Disconnects
   - LH_2 T-0 Umbilical
   - LO_2 T-0 Umbilical

2. **Verify** no visible cryogenic liquid of excessive vapors.

OMRS S00FB0.360-1

ME 08

ETM_____ Date 12-04-01

Not Performed: N/A

ET 01

12/4/01

50-12

CTIF CVM1 222
CVM2

Monitor and **videotape** following ET TPS surface areas and GO_2 Vent Area during LO_2/LH_2 loading through Prepressurization (LO_2 at T-2M55s and LH_2 at T-1M57s):

- LH_2 Aft Dome
- LH_2 Barrel
- Intertank (external)
- LO_2 Tank
- GO_2 Vent Area
- Protuberances

OMRS S00FB0.005-1

ME 08

ETM _____ Date 12-04-01

Not Performed: N/A

50-13

CTIF CVM1 222

Perform Operation 60 - Group 1 Monitoring.

ETM R. Seale Date 12/4/01

Not Performed: NA

ET 01

12/4/01

50-14

CTIF CVM2 222

Perform Operation 70 - Group 2 Monitoring.

ETM ME 08 Date 12-04-01

Not Performed: N/A

50-15

CTIF CVM2 222

Once per hour minimum, after start of LO_2/LH_2 (until LO_2/LH_2 low level sensors read dry), **scan** LO_2 feed line brackets and flange closeouts per Table 50-1.

ETM R Brewer Date 12-04-01

Not Performed: N/A

ET C1
12/4/01

50-16

CTIF CICE 222

As count proceeds, for concerns/ observations identified:

1. **Record** observation/concern on trouble tape per Table 50-1.

2. **Document** observed condition on Table 50-2, Observation Worksheet.

ETM D Seals Date 12/4/01

Not Performed: N/A

50-17

TBC CTIF 136
CTIF CICE 222

Perform Operation 80 - Final Inspection when called by S0007/S0014/S0037.

ETM ME 08 Date 12-04-01

Not Performed: N/A

ET 01

12/4/01

NOTE
Final SSV scan typically commences at L-2 hours.

50-18

CTIF CVM1 222
CVM2

Perform final SSV scan.

ETM D Scuka Date 12/4/01

Not Performed: N/A

50-19

CTIF CVM1 222
CVM2

At start of T-9 minute hold, **configure** OTV cameras for terminal count.

ETM R. Scuka Date 12/4/01

Not Performed: N/A

ET
01

12/4/01

50-20

If winds are from the north (+/-30 degrees) and are 38 knots (peak as measured at 60 feet above ground) or greater:

1. **Monitor/videotape** nose cone area during high winds.

2. **Verify:**

A. No ice formation on the +Y and -Y GO_2 vent seal footprint areas.

B. No damage to the ET TPS at the +Y and -Y GO_2 vent seal footprint areas.

C. No damage to the +Y and -Y GO_2 vent seals themselves.

D. No evidence of GO_2 leakage from +Y/-Y GO_2 vent seals to ET interface.

USA VM 070

OMRSD S00L00.150

ETM N/A Date N/A

Not Performed: ET 01

12/4/01

50-21

CTIF

Verify launch or launch scrub (drain back). **Record** data.

Launch N/A Scrub ✓

Date 12/4/01 Time 22:44 GMT

Scrub at T- 5:00

ETM [signature] Date 12/4/01

ET 01

12/4/01

50-22

CTIF

ET-Orbiter MPS monitoring for leakage and ET TPS Surface Areas and GO_2 Vent Area monitoring/recording for launch complete.

OMRSD S00FB0.005-1
OMRSD S00FB0.360-1

USA VM 070

ETM R. Seale Date 12/5/01

Not Performed: N/A

NOTE
When completely filled and drain is initiated, it takes approximately 1 hour until the LH_2 tank low level sensors read dry, and approximately 1.5 hours until the LO_2 tank low level sensors read dry.

50-23

CTIF CVM1 222
CVM2

If launch scrubbed (or drain back declared) after start of LO_2/LH_2 slow fill mode:

- **Perform** Operation 90 - LO_2/LH_2 Drain Monitoring.
- **Record** observations/concerns on trouble tape per Table 50-1.
- **Document** all observations/concerns on Table 50-2 Observation Worksheet.

ETM R. Seale Date 12/5/01

Not Performed: N/A

ET 01

12/5/01

50-24 **CTIF**

GO_2 Vent seal to ET interface monitoring for seal fretting and continuous GO_2 escape complete.

OMRSD S00FB0.350-1 USA VM 070

ETM R. Seale Date 12/4/01

Not Performed: N/A

50-25

CTIF CVM1 222
CVM2

Terminate scanning operations.

ETM R. Seale Date 12/4/01

50-26

CTIF CVM1 222
CVM2

Perform Operation 100 - Console Securing.

ETM R. Seale Date 12/5/01

50-27

CTIF

If LO_2/LH_2 tanking started, **perform** Operation 110 - Summary Tape.

ETM R. Seale Date 12/5/01

Not Performed: N/A

ET 01

12/5/01

NOTE
Following step may be not performed at CTIF discretion.

50-28 **CTIF TBC 136**
TBC STM

If Post Drain Walkdown to occur at night, **request** PAD xenon lighting be maintained/activated for duration of walkdown.

Not Performed: N/A

NOTE
Post drain walkdown typically commences approximately 1.5 hours after LH_2/LO_2 low level sensors read dry.

50-29

CTIF

If launch scrubbed after start of LO_2/LH_2 tanking, **perform** Operation 120 - Post-Drain Walkdown.

ETM R Seale Date 12/5/01

Not Performed: N/A

50-30

CTIF

If launch occurred, **perform** Operation 130 - Post launch Walkdown.

ETM N/A Date N/A

Not Performed: ET 01
12/5/01

ET 01
12/5/01

50-31

CTIF

If launch occurred, **perform** Operation 140 - Film Review.

ETM N/A Date N/A

Not Performed: ET 01 12/4/01

50-32

SSV Debris Assessment complete.

ET 01 12/4/01

Table 50-1 Observation Documentation Procedure

1.	CTIF	CVM1 CVM2	222	Locate anomaly/concern on pertinent OTV(s)
2.	CTIF			Punch-up pertinent OTV on trouble monitor. Update trouble tape log in table below.
3.	CTIF			Start the trouble tape.

NOTE

Trouble tape shall be allowed to run until sufficient OTV documentation of observation/concern has been made. OK to change OTV's while trouble tape is running.

4	CTIF	After observation/concern has been documented on the trouble tape, stop the trouble tape. Update trouble tape log below.

TROUBLE TAPE LOG

Trouble Tape No.	Start Time (GMT)	Stop Time (GMT)	OTV	Description
1	13:36	13:39	154	LOZ F/L SCAN
	14:22	14:24	154	LOZ F/L SCAN
	15:14	15:16	154	LOZ F/L SCAN
	16:16	16:20	154	LOZ F/L SCAN
	17:15	17:17	154	LOZ F/L SCAN
	18:17	18:18	154	LOZ F/L SCAN
	19:18	19:20	154	LOZ F/L SCAN
	20:04	20:06	162	CRACK, -Y VERT STRUT
	20:18	20:20	154	LOZ F/L SCAN
	22:08	22:10	135	HANDRAIL, BELOW VERT STABILIZER.

TROUBLE TAPE LOG

ET 01
12/5/01

Table 50-1 Observation Documentation Procedure

Trouble Tape No.	Start Time (GMT)	Stop Time (GMT)	OTV	Description
1	22:16	22:18	ISA	LOZ FIL SCAN1

*** End of Table 50-1 Observation Documentation Procedure ***

ET 01

12/5/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. 1

Observed By: FINAL INSP'N TEAM

Date 12/4/01 Time 1200 GMT 1700

Camera No. (or Walkdown) (FIT)

Description:

CRACK IN I/T SOFI. LOCATED IN VALLEY BETWEEN ~~RIBS~~ STRINGERS S16-6 AND S17-6 (~~TWO~~ ① SECOND VALLEY -Z FROM -Y THRUST PNL) NO OFFSET/ICE/FROST. CRACK IS APPROX 1/8"W x 6"L.

⊖ ZN. D. Space 12/4/01
ET JT

Acceptance Rationale (or IPR/PR No.):

ACCEPTABLE PER NSTS 08303, REF PHOTO 2.2.3

CICE [signature] Date 12/4/01

CTIF [signature] Date 12-04-01
LEGGETT

ET
01
12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. 2

Observed By: SEALE / FINAL INSPN TEAM

Date 12/4/01 Time 1200 / 1500 GMT 1700 / 2000

Camera No. (or Walkdown) 163 + FIT

Description:

CRACK IN -Y VERT STRUT FAIRING C/O TUD SURFACE. APPROX 2 1/2" L x 1/8" WD NO OFFSET.

Acceptance Rationale (or IPR/PR No.):

ACCEPTABLE PER NSTS 08303, REF PHOTO 2.2.24

CICE Amanda Ohri Date 12/4/01

CTIF Ken Eggers Date 12-4-01

ET 01

12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

ET 01

12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

ET 01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

ET 01
12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

ET 01

12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

ET 01
12/4/01

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. _____

Observed By: _____

Date _____ Time _____ GMT _____

Camera No. (or Walkdown) _____

Description:

_____

_____

_____

_____

Acceptance Rationale (or IPR/PR No.):

_____

_____

_____

CICE _____ Date _____

CTIF _____ Date _____

***** End of Table 50-2 Observation Worksheet *****

*** End of Operation **50** ***

09-01-2001
APPROVED

OMI S6444 J02
APPROVED

OPERATION 60 Group 1 Monitoring LO2 Chill Down Thru T-0

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **15.0**

NOTE
Do not perform this operation if launch scrub declared before LO_2 Chill Down commences.

Operation Not Performed: N/A

NOTE
This operation monitors LO_2 Ogive and Barrel and associated components/ areas from start of Chill Down through T-0 via OTV cameras 013/113, 060/160, 061/161, 062/162, 063/163 and 064/164. OTV cameras 013/113 and/or 062/162 will view -Y GO_2 Vent Hood Seal at all times. At no time will both cameras be positioned away from the -Y GO_2 Vent Hood Seal. OTV cameras 068/168 and 069/169 view SW and NE GO_2 Vent Areas respectively. These are fixed FOV cameras and do not have pan, tilt, etc. capability. Steps in this operation are contingent upon progression of launch countdown operations and may be not performed if countdown is terminated.

LO_2 Chill Down To L-2 Hour Mark

60-1 CVM1 JYVR 138

At start of vehicle LO_2 Chill Down, **start** recorders for cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169.

ETM R Brewer Date 12-04-01

Support: COMM

60-2 **Record** LO_2 MPS Chill Down start date and time (GMT).

12-04-01 ET 05

LO_2 MPS Chill Down Date ~~13:21~~ GMT Time 13:21 GMT

ETM R Brewer Date 12-04-01

60-3 CVM1 JTV1 223

From start of LO_2 Chill Down until start of LO_2 Fast Fill on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169 **monitor/videotape** ET-TPS surfaces. No cryogenic liquid or excessive vapors allowed.

ETM R Brewer Date 12-04-01

Support: COMM

Not Performed: N/A

ET 05
12/4/01

60-4 **Record** LO_2 Slow Fill start date and time (GMT).

LO_2 Slow Fill Date 12-04-01 GMT Time 13:45 GMT

ETM R Brewer Date 12-04-01

Not Performed: N/A

60-5 **Record** LO_2 Fast Fill start date and time (GMT).

LO_2 Fast Fill Date 12-04-01 GMT Time 13:58 GMT

ETM JM Wallace Date 12-04-01

Not Performed: NA

60-6 **CVM1 JTV1 223**

From start of LO_2 Fast Fill until LO_2 stable replenish mode is established, **monitor/videotape** ET-TPS surfaces on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169. **Scan** LO_2 Tank. **Alternate** cameras and **scan** from Intertank to LO_2 Barrel Splice to GO_2 Vent Hood. No cryogenic liquid or excessive vapors allowed.

ETM JM Wallace Date 12-04-01

Support: COMM

Not Performed: NA

ET 01

12/4/01

60-7 **Record** LO_2 Topping date and time (GMT).

LO_2 Topping Date 12-04-01 GMT Time 15:15 GMT

ETM R Brewer Date 12-04-01

Not Performed: N/A

60-8 **Record** LO_2 Stable Replenish mode start date and time (GMT).

LO_2 Stable Replenish Date 12-04-01 GMT Time 16:01 GMT

ETM R Brewer Date 12-04-01

Not Performed: N/A

60-9 **CVM1 JTV1 223**

From time LO_2 Stable Replenish mode is established until time for final SSV scan (approximately L-2 hours), **monitor, scan and videotape** ET-TPS surfaces on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169. No cryogenic liquid or excessive vapors allowed.

ETM ME 08 Date 12-04-01

Support: COMM

Not Performed: N/A

ME 01

12/4/01

Final SSV Inspection Scan

NOTE

Final SSV Inspection Scan should begin not later than 1.5 hours prior to start of T-9 minute hold (approximately L-2 hours) to allow ample time to finish. Final SSV Inspection Scan shall include the ET, SRB's and the Orbiter.

Final scan may be altered or partially performed in the event that time constraints will not permit a complete SSV scan prior to start of T-9 minute hold.

During Final SSV Inspection Scan the camera lights on OTV cameras 061/161 and 062/162 shall be turned "Off" when view passes over the Orbiter cockpit to preclude "distracting" the Flight Crew.

60-10 CVM1 JTV1 223

Perform Final SSV Inspection Scan with OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163 and 064/164. Scan passes shall view entire SSV with cameras at approximate full zoom in during final scan.

ME 08

ETM_____ Date 12-04-01

Not Performed: N/A

ET 01

12/4/01

Terminal Count Camera Positions

NOTE

This step performed for SSME ignition only and may be not performed if launch is scrubbed prior to pick-up of T-9 minute count. Cameras must be positioned for ignition no later than T-9 minutes. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition in an arbitrary order.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for OTV operators to rehearse camera movements.

CVM1 camera positions for SSME ignition are defined in Table 60-1.

60-11 **CVM1** **JTV1** **223**

Ref Table 60-1, **position** cameras 004/104, 013/113, 042/142, 054/154, 060/160, 062/162 for terminal count.

ETM ME 08 Date 12-04-01

Support: COMM

Not Performed: N/A

60-12 Operation - Group 1 Monitoring - LO_2 Chill Down Thru T-0 complete.

ET 01
12/4/01

Table 60-1 CVM1 Camera Positions for Terminal Count

NOTE

This Table defines CVM1 camera positions for terminal countdown. Cameras should be positioned for ignition no later than pick-up of T-9 minutes count. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition non-sequentially.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for operators to rehearse camera movements with ice console.

The GO_2 Vent Arm (GVA) retracts at T-2m30s.

CVM1 Camera Positions Are Defined As Follows:

004/104

GUCP centered in frame so that GUCP will stay in view throughout SRB "twang".

042/142

At approximately T-1 hour, view and monitor Orbiter access arm while Orbiter hatch is being closed.

At **T-7m30s**, watch Orbiter access arm retract, then view bipod strut in center of frame, LO_2 feedline fairing in top of frame, and Orbiter hatch in right of frame.

054/154

At **T-3m50s**, view Orbiter right hand body flap movement, then zoom out with Orbiter/ET umbilicals at approximate frame center, Orbiter trailing edge at frame bottom, and edge of +Y (RH) SRB just in view at frame right.

ET
12/4/01

Table 60-1 CVM1 Camera Positions for Terminal Count

013/113
At **T-2m30s**, watch lift of GO_2 vent arm for debris and nose cone/vent louvers for ice damage. Immediately following lift of GO_2 vent arm, center frame on GO_2 vent louver and then zoom-out so that entire ET movement is seen during SRB 'twang' at SSME ignition.

060/160
At approximately **T-2m30s**, after GO_2 vent arm retracts, go full zoom in for a close-up inspection of the GO_2 vent louver. After CICE concurrence, go full zoom out and position camera with SSV centered and ET nose cone at frame top.

062/162
At approximately **T-2m30s**, after GO_2 vent arm retracts, go full zoom in for a close-up inspection of the -Y GO_2 vent louver. After CICE concurrence, zoom out until ET nose spike is at top of frame with ET centered.

061/161
At approximately **T-4m00s**, verify camera lights are off. Then position camera to view astronaut closing visor at T-2 minutes 00 seconds.

068/168 and 069/169
Immediately after GO2 vent hood lift, turn lights off to preclude distracting orbiter crew when the GVA rotates to its latchback position.

***** End of Table 60-1 Camera Positions for Terminal Count *****

*** End of Operation **60** ***

12/4/01

OPERATION 70 Group 2 Monitoring - LH_2 Chill Down Thru T-0

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **15.0**

NOTE

Do not perform this operation if launch scrub declared before start of LH_2 Chill Down.

Operation Not Performed: U/A

NOTE

This operation monitors LH_2 Barrel and associated components/areas start of LH_2 Chill Down to pre-pressurization via OTV cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167.

Steps in this operation are contingent upon progression of launch countdown operations and may be not performed if countdown is terminated.

12/4/01

LH_2 Chill Down To L-2 Hour Mark

70-1 **CVM2** **JYVR** **138**

At start of LH_2 Chill Down, **start** recorders for cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167.

ETM Tom Ford Date 12.4.01

Support: COMM

70-2 **Record** LH_2 Chill Down start date and time (GMT).

LH_2 Chill Down Date 12.4.01 Time 13:08 GMT

ETM Tom Ford Date 12.4.01

70-3 **CVM2** **JTV2** **225**

From start of propellant loading until start of LH_2 Fast Fill on OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167, **monitor/videotape** ET-TPS surfaces. No cryogenic liquid or excessive vapors allowed.

ETM Tom Ford Date 12.4.01

Support: COMM

Not Performed: NA

ET 01

12/4/01

70-4 **Record** LH_2 Slow Fill start date and time (GMT).

LH_2 Slow Fill Date 12.4.01 Time 13:18 GMT

ETM Tom Ford Date 12.4.01

Not Performed: NA

70-5 **Record** LH_2 Fast Fill start date and time (GMT).

LH_2 Fast Fill Date 12.4.01 Time 14:03 GMT

ETM Tom Ford Date 12.4.01

Not Performed: NA

70-6 **CVM2 JTV2 225**

From start of LH_2 Fast Fill until stable replenish mode is established, **scan** LH_2 Tank. **Alternate** OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167 and **scan/videotape** from LH_2 Aft Dome to Intertank.

ETM Tom Ford Date 12.4.01

Support: COMM

Not Performed: NA

ET 01

12/4/01

70-7

Record start date and time (GMT) for LH_2 Topping.

LH_2 Topping Date 12-04-01 Time 15:15 GMT

ETM ME 08 Date 12-04-01

Not Performed: N/A

70-8 **Record** LH_2 Stable Replenish mode start date and time (GMT).

LH_2 Stable Replenish Date 12-04-01 Time 15:59 GMT

ETM ME 08 Date 12-04-01

Not Performed: N/A

70-9 **CVM2 JTV2 225**

During LH_2 Stable Replenish mode and until time for final scan (approximately L-1.5 hours), on OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167, **monitor/videotape** ET TPS surfaces including LO_2 Feed Line, LH_2 Feed Line, LH_2 Recirculation Line, LH_2 Aft Dome and manhole covers, LH_2/LO_2 Umbilicals, and TSM LH_2/LO_2 Umbilicals. No cryogenic liquid or excessive vapors allowed.

ETM ME 08 Date 12-04-01

Support: COMM

Not Performed: N/A

ET 01

12/4/01

Final SSV Inspection Scan

NOTE

Final SSV Inspection Scan should begin not later than 1.5 hours prior to start of T-9 minute hold (approximately L-2 hours) to allow ample time to finish. Final SSV Inspection Scan shall include the ET, SRB's and the Orbiter.

Final SSV Inspection Scan may be altered or partially performed in the event that time constraints will not permit a complete SSV scan prior to start of T-9 minute hold.

70-10 CVM2 JTV2 225

Perform Final SSV Inspection Scan with OTV cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 064/164. Scan passes shall view entire SSV with cameras at full zoom in during final scan.

ETM R. Seale Date 12/4/01

Support: COMM

Not Performed: N/A

ET
01

12/4/01

T-9 Minute Terminal Count

NOTE

Next step performed for terminal count only and may be not performed if launch is scrubbed prior to pick-up of T-9 minute terminal count. Cameras must be positioned for SSME ignition no later than T-9 minutes. 'Spot' scanning after pick-up of the T-9 minute terminal count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition in an arbitrary order.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for OTV operators to rehearse camera movements.

CVM2 camera positions for terminal count are defined in Table 70-1.

70-11 **CVM2** **JTV2** **225**

Ref Table 70-1, **position** cameras 009/109, 033/133, 056/156, 065/165, 066/166 061/161, 070/170, 071/171 and 067/167 for terminal count.

ETM R. Seaver Date 12/4/01

Support: COMM

Not Performed: N/A

70-12 Operation - Group 2 Monitoring - LH_2 Chill Down Thru T-0 complete.

ET 01

12/4/01

Table 70-1 - CVM2 Camera Positions for Terminal Count

NOTE
This Table defines CVM2 camera positions for terminal countdown. Cameras should be positioned for ignition no later than pick-up of T-9 minutes count. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence. The Orbiter access arm (OAA) retracts at T-7M30S. Orbiter body flap movement occurs at T-3m50s. Cameras may be positioned for SSME ignition non-sequentially Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for operators to rehearse camera movements with ice console.

ET 01

12/4/01

Group 2 Camera Positions Are Defined As Follows:

033/133
Full zoom out. LO_2 feed line in frame center and MLP deck at bottom.

055/155
View ET aft dome with MLP deck just out of view at bottom, ET XT-2058 ring frame at frame top and both SRB's just in view at sides.

056/156
View ET aft dome with MLP deck just out of view at bottom. ET XT-2058 ring frame at frame top and both SRB's just in view at sides.

065/165
Full zoom out. SSV centered. MLP deck edge just in view at bottom.

066/166
ET centered. Intertank to LO_2 Barrel splice at frame top with the majority of Orbiter wing in view.

067/167
Center on GUCP for optimum view.

070/170 and 071/171
At **T-9m00s**, zoom in on space shuttle main engine with camera providing best view. Zoom out on SSME for wide angle view with other camera.

009/109
At approximately **T-3m50s**, position to view Orbiter body flap and elevons movement. Afterwards, center on LH_2 umbilical with -Y vertical strut at frame top.

061/161
At approximately **T-1m30s**, tilt-up to GO_2 Vent Footprint. Zoom in. Pause. If footprint is acceptable, zoom out and tilt down to view Orbiter nose/cockpit through liftoff.

***** End of Table 70-1 - CVM2 Camera Positions for Terminal Count *****

*** End of Operation **70** ***

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OPERATION 80 Final Inspection

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **PAD A/B**
Hazard (Y/N): **Y**
Duration (Hrs): **3.0**

NOTE

Final Inspection may not need to be performed depending on LO_2/LH_2 tanking and launch countdown, as determined by CTC/TTL.

Final Inspection Team stay time guidelines for each level are given in Table 80-1. These guidelines are for reference only and may be deviated from at PICE discretion.

Operation Not Performed: N/A

ET
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12/14/01

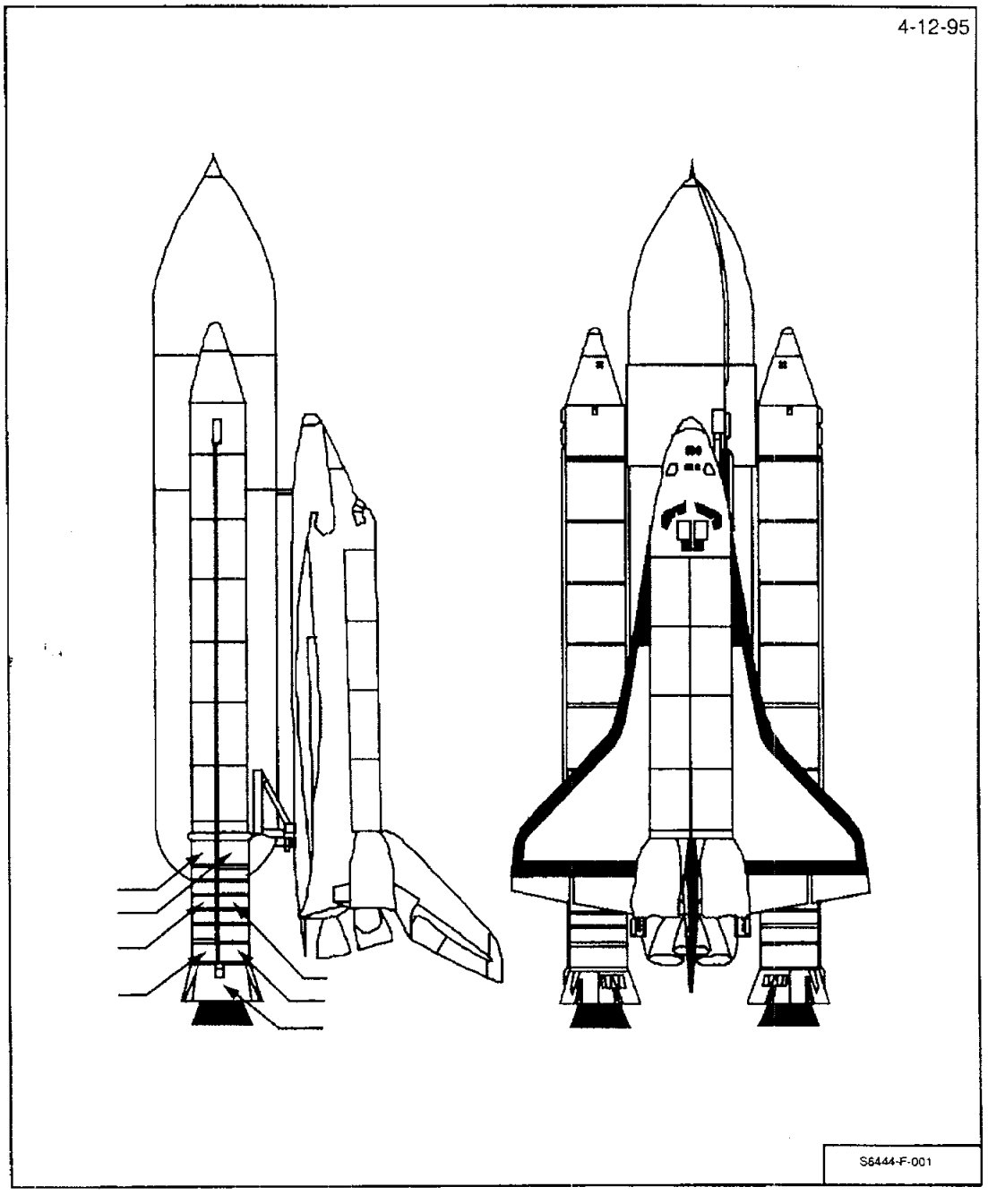

Figure 80-1: Deck (0) Level
(For Reference Only)

12/4/01

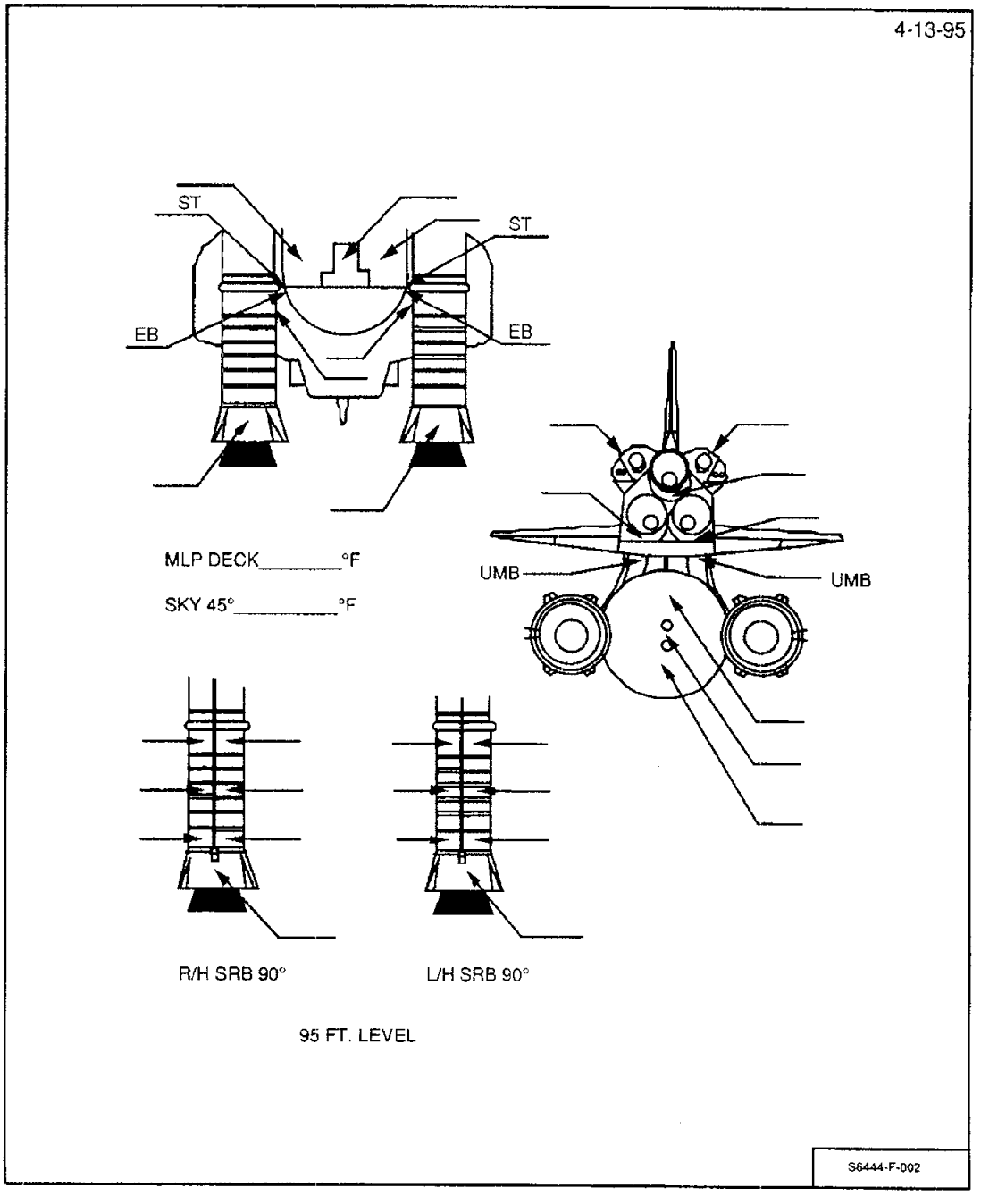

Figure 80-2: Deck (0) and 95 Ft Levels
(For Reference Only)

ET 01
12/4/01

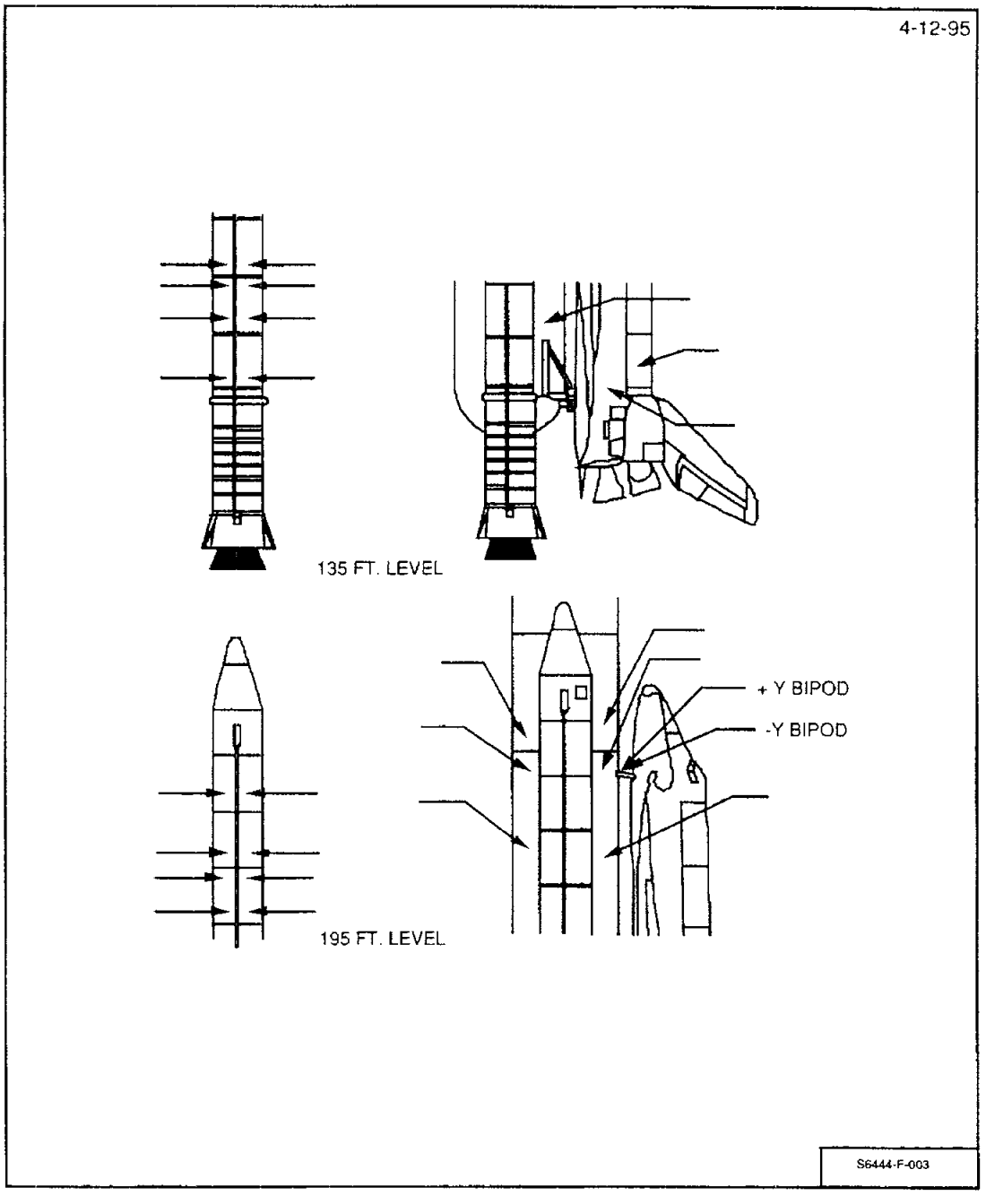

Figure 80-3: 135 and 195 Ft Levels
(For Reference Only)

12/4/01

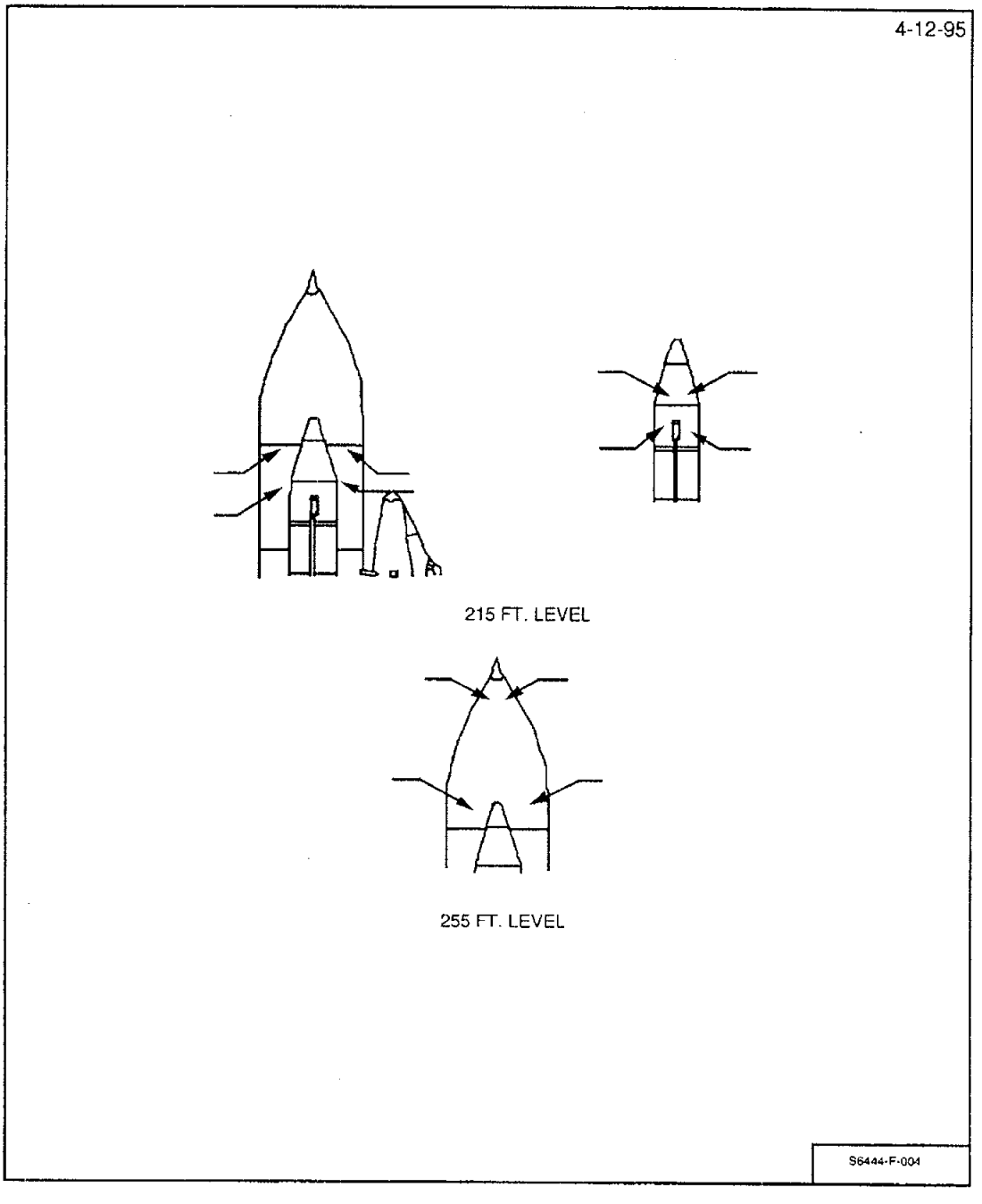

Figure 80-4: 215 and 255 Ft Levels
(For Reference Only)

ET 01
12/1/01

WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

WARNING

Personnel performing final inspection shall be attired in **Nomex coveralls with gloves and hoods**. Personnel shall have available gloves, hoods, and **ELSA** at all times during walkdown.

Personnel using Sony DKC-ID1 camera shall verify lithium ion battery is securely locked in bayonet connector and the lithium button battery door is locked and taped in place. Personnel shall ensure the flash is not activated on the camera.

Personnel using Kodak DC-50/120 shall verify alkaline batteries are properly installed and the flash is not active on the camera.

Personnel using digital cameras (Sony DKC ID1, Kodak DC-50/120 shall not use these cameras in the presence of a hydrogen leak or an oxygen enriched atmosphere (readings greater than 23 percent O_2).

NOTE

Task Team Leader (TTL) for final inspection is PH-H. Additional personnel (listed below) may be added to the final inspection team with CTC, Launch Director, and Safety concurrence.

JSC Level II	(1)
PH-H	(2)
SFOC ETM	(1)

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80-1 **Assemble** following final inspection team members:

TTL - PH-H	(1)
PH-H	(1)
SFOC ETM	(2)
LMSSC LSS	(1)
SFOC Safety	(1)

80-2 Final inspection team **perform** walkdown of SSV and associated facilities as follows:

NOTE

Following substep may be not performed with TTL concurrence.

Tables 80-2 and 80-3 are reference only items. Images are to be taken of targets of opportunity. Images must be taken with 35 mm and digital cameras. Digital images shall be inputted into SIMS.

1. Ref Tables 80-2 and 80-3, photograph SSV points of opportunity during final inspection using 35 mm. **Record** data.

Roll No. N/A

Negative No. N/A

Work order No. N/A

Sub Step Not Performed: ~~N/A~~ ET 01 12/4/01

2. Reference Tables 80-2 and 80-3, **take** digital image of SSV points of opportunity using digital camera.

   Description: Final Inspection Team

3. See Figures 80-1 through 80-4, **measure and record** (deg F) SSV external surface temperatures using IR gun(s)/scanners.

ET 01 12/4/01

NOTE
The following substep references inspection areas. However, inspection shall not be limited to these areas. Inspection shall be of entire SSV and specific areas of concern as defined by the TTL, CTC, or Launch Director.

4. **Visually inspect:**

- Orbiter aft engine compartment external surfaces for condensation and ice formations.
- ET TPS surfaces which cannot be observed by the OTV system.
- Specific areas of concern as determined by the TTL, CTC, or Launch Director.

OMRSD S00U00.020-A-1

OMRSD S00U00.020-C-1 USA VM 070

OMRSD S00U00.020-D-1

80-3 Final Inspection complete. **Verify** no constraints to continue.

TTL (PH-H) _____ Date 12/4/01

SFOC-ETM R. Seale Date 12/4/01

80-4 Operation - Final Inspection complete.

ETM R. Seale Date 12/4/01

12/4/01

Table 80-1 Final Inspection Team Walkdown Stay Times

255 Ft Level - 5 Minutes

- LO_2 Ogive and Barrel acreage
- GO_2 Pressurization Line
- LO_2 Tank Cable Tray
- Visible LH SRB surfaces
- GO_2 Vent Ducts

215 Ft Level - 20 Minutes

- ET GH_2 7 inch Vent Assembly
- ET acreage (between -Z and -Y axis)
- GO_2 vent area
- Orbiter tiles
- Visible SRB surfaces
- Inter tank-to-LO_2 Barrel splice

195 Ft Level - 10 Minutes

- LO_2 Feed Line
- ET/Orbiter Bipods (side and bottom view)
- -Y ET/SRB forward attachment (bottom view)
- -Y ET/SRB aft attachments (top view)
- Inter tank splice areas (LO_2 and LH_2)
- ET acreage (between -Y and +Z axis)
- Orbiter tiles
- Visible LH SRB surfaces

135 Ft Level - 10 Minutes

- LH_2 ET/Orbiter Umbilical
- -Y ET/SRB C/T
- -Y Vertical Strut
- LO_2 Feed Line
- ET acreage between -Y axis and +Z axis
- ET/Orbiter attachments (top view)
- Visible LH SRB surfaces
- Orbiter aft fuselage

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Table 80-1 Final Inspection Team Walkdown Stay Times
0 Level - 30 Minutes

- LH_2 Aft Dome
- ET acreage around +Z axis
- ET acreage around -Z axis
- LO_2 Feed Line
- LH_2 Feed Line
- ET/Orbiter attachments - Bottom view
- ET/Orbiter LH_2 and LO_2 Umbilicals
- T-0 LH_2 and LO_2 Umbilicals
- Space Shuttle Main Engines (SSME)
- Orbiter tiles
- ET/SRB aft attachments
- Visible SRB surfaces
- SRB ignition overpressure sound suppression water troughs

*** End of Table 80-1- Final Inspection Team Walkdown Stay Times ***

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Table 80-2 Final Inspection Team - Telephotos

TELEPHOTOS - 255 FT LVL

Photo	Camera Orientation	Notes
GO_2 Vent Ducts	Horizontal	
LO_2 Acreage	Vertical	

TELEPHOTOS - 215 FT LVL

Photo	Camera Orientation	Notes
-Y Bipod Ramp	Horizontal	From RSS
LO_2 P/L Ice Frost Ramps	Vertical	From RSS; Requires 3-4 shots
GO_2 Seal/Hood	Horizontal	From haunch & RSS
GUCP	Vertical	

TELEPHOTOS - 195 FT LVL

Photo	Camera Orientation	Notes
-Y Bipod Ramp & Jack PAD C/O	Horizontal	

TELEPHOTOS - 135 FT LVL

Photo	Camera Orientation	Notes
LH_2 UMB	Horizontal	
-Y Longeron	Vertical	If needed
Jack Pad Closeouts	Horizontal	
LH_2 Acreage	Vertical	

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Table 80-2 Final Inspection Team - Telephotos

TELEPHOTOS - MLP

Photo	Camera Orientation	Notes
LH_2 UMB	Horizontal	From West
LH_2 UMB	Horizontal	From NW
EB-7	Horizontal	
EB-8	Horizontal	
LH_2 Aft Dome	Horizontal	
Third Hard Point C/O	Vertical	
LH_2 Barrel	Horizontal	From North
SSV Overall	Horizontal	From North
SSV Overall	Horizontal	From East
LO_2 F/L Bracket & Bellows	Vertical	XT-1973
LO_2 F/L Bracket	Vertical	XT-1871
LO_2 F/L Bracket	Vertical	XT-1623
LO_2 F/L Bracket	Vertical	ST-1377 & XT-1129
LO_2 F/L Bracket & Bellows	Vertical	XT-1129 & XT-1106 from SE
LO_2 P/L & C/T	Vertical	From SE

600 MM PHOTOS - 255 FT LVL

Photo	Shutter Speed	Notes
GO_2 Vent Ducts	1/30	Contingency

600 MM PHOTOS - 215 FT LVL

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Table 80-2 Final Inspection Team - Telephotos

Photo	Shutter Speed	Notes
-Y GO_2 Seal	1/30	
-Y Bipod Ramp	1/30	Contingency
Jack Pad C/O's	1/4	Difficult if windy
LO_2 F/L	1/15	
-Y Vertical Strut (Crack)	1/30	

600 MM PHOTOS - 195 FT LVL

Photo	Shutter Speed	Notes
-Y Bipod Ramp	1/30	Contingency

600 MM PHOTOS - 135 FT LVL

Photo	Shutter Speed	Notes
LH_2 UMB	1/30	
-Y Vertical Strut (Crack)	1/60	
LO_2 F/L Bellows	1/15	Contingency

600 MM PHOTOS - MLP

Table 80-2 Final Inspection Team - Telephotos

Photo	Shutter Speed	Notes
LH_2 UMB	1/30	From West
LH_2 UMB	1/30	From NW
LH_2 UMB	1/30	From East
LH_2 UMB Actuator C/O	1/15 or 1/30	From North standing next to water pipe
LO_2 UMB	1/5	Lower Inboard
LO_2 UMB	1/8	Inboard
LO_2 F/L Bracket & Bellows	1/15	One photo to include XT-1978 & XT-1973
LO_2 F/L Bracket	1/15	XT-1871
LO_2 F/L Bracket	1/15	XT-1623
LO_2 F/L Bracket	1/15	XT-1377
LO_2 F/L Bracket	1/30	One photo to include XT-1129 & XT-1106
LO_2 F/L Bracket	1/30	From SE corner; One photo to include XT-1129 & XT-1106
Jack Pad C/O's	1/15	From SE corner
Ice Frost Ramps or Pal Ramps	1/15 or 1/30	Contingency
LH_2 UMB Inboard	1/15	From East
+Y Longeron	1/15 or 1/30	Contingency
-Y Longeron	1/15	Contingency

WIDE ANGLE PHOTOS - 255 FT LVL

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Table 80-2 Final Inspection Team - Telephotos

Photo	Camera Orientation	Lens	Notes
LO_2 Tank	Vertical	35-70 mm	
GO_2 Vent Ducts	Horizontal	35-70 mm	

WIDE ANGLE PHOTOS - 215 FT LVL

Photo	Camera Orientation	Lens	Notes
Overall GH_2 Vent Line	Horizontal	35-70 mm	
Orbiter Nose, ET -Y Side	Horizontal	35-70 mm	
Orbiter Nose, ET -Y, +Z Side	Horizontal	35-70 mm	From RSS
Forward Half of Vehicle	Vertical	28 mm	From RSS
Entire Orbiter	Vertical	28 mm	From RSS

WIDE ANGLE PHOTOS - 195 FT LVL

Photo	Camera Orientation	Lens	Notes
Aft Part of SSV, LH Wing	Vertical	35-70 mm	
Orbiter Fwd Section, Upper LH_2 Tank	Vertical	35-70 mm	
Bipod, -Y, +Z Intertank Area	Horizontal	35-70 mm	

WIDE ANGLE PHOTOS - 135 FT LVL

Photo	Camera	Lens	Notes

Table 80-2 Final Inspection Team - Telephotos

	Orientation	
Orbiter Aft Section	Vertical	35-70 mm
Lower LH_2 Tank & LH SRB	Vertical	35-70 mm

WIDE ANGLE PHOTOS - MLP

Photo	Camera Orientation	Lens	Notes
Overall Orbiter Left Side	Vertical	28 mm	
ET -Y, +Z Quadrant	Vertical	28 mm	
ET -Z Side	Vertical	28 mm	
ET +Y, +Z Quadrant	Vertical	28 mm	
Overall Orbiter Right Side	Vertical	28 mm	
ET Aft Dome	Horizontal	35-70 mm	
-Z Side of LO_2 T-0; RCS Stinger	Horizontal	35-70 mm	
+Z Side of LO_2 T-); RCS Stinger OMS Nozzle	Horizontal	35-70 mm	
-Z Side of LH_2 T-0; RCS Stinger	Horizontal	35-70 mm	
+Z Side of LH_2 T-0; RCS Stinger OMS Nozzle	Horizontal	35-70 mm	
Overall SSME Cluster	Horizontal	50 mm	-Y Side
SSME No. 2	Horizontal	50 mm	
SSME No. 1, -Z Side	Horizontal	50 mm	
SSME No. 3	Horizontal	50 mm	
Overall SSME Cluster	Horizontal	50 mm	+Y Side
LO_2 UMB Area	Horizontal	35-70 mm	
LH_2 UMB Area	Horizontal	35-70 mm	
ET/ORB UMB & ORB	Horizontal	28 mm	From under ET

ET 01

Table 80-2 Final Inspection Team - Telephotos
Lower Surface

*** End of Table 80-2 Final Inspection Team - Telephotos ***

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Table 80-3 Reduced Final Inspection Team Photos

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 255 FT LVL

Photo	Camera Orientation	Lens	Notes
GO_2 Vent Ducts	TELE	Horizontal	

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 215 FT LVL

Photo	Camera Orientation	Lens	Notes
-Y Bipod Ramp	Horizontal	TELE	From RSS
LO_2 P/L Ice/Frost Ramps	Vertical	TELE	From RSS; 2 photos required
GO_2 Seal/Hood	Horizontal	TELE	From RSS
GUCP	Vertical	TELE	
Fwd Half of SSV	Vertical	28 mm	From RSS
Entire Orbiter	Vertical	28 mm	From RSS

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 195 FT LVL

Photo	Camera Orientation	Lens	Notes
-Y Bipod Ramp & Jack Pad C/O's	Horizontal	TELE	

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 135 FT LVL

Table 80-3 Reduced Final Inspection Team Photos

Photo	Camera Orientation	Lens	Notes
LH_2 UMB	Horizontal	TELE	
Orbiter Aft Section	Vertical	35-70 mm	

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - MLP DECK

Photo	Camera Orientation	Lens	Notes
LH_2 UMB	Horizontal	TELE	From West
ET Aft Dome	Horizontal	TELE	
Aft Hard Point Closeout	Vertical	TELE	
LH_2 Tank	Horizontal	TELE	From North
LO_2 Tank	Horizontal	TELE	From North
LO_2 Tank	Horizontal	TELE	From East
LO_2 F/L Bracket Bellows	Horizontal	TELE	XT - 1978 & XT - 1973
LO_2 F/L Bracket	Horizontal	TELE	XT - 1871
LO_2 F/L Bracket	Horizontal	TELE	XT - 1623
LO_2 F/L Brackets	Horizontal	TELE	XT - 1377 & XT - 1129
LO_2 F/L Brackets & Bellows	Horizontal	TELE	XT - 1129 & XT - 1108; from SE
LO_2 P/L & C/T	Horizontal	TELE	From SE
Overall Orbiter Left Side	Vertical	28 mm	
ET -Z Side	Vertical	28 mm	
Overall Orbiter Right Side	Vertical	28 mm	
Overall SSME Cluster -Y Side	Horizontal	28 mm	
Overall SSME Cluster +Y Side	Horizontal	28 mm	

12/4/01

Table 80-3 Reduced Final Inspection Team Photos

ET/Orb UMB & Orbiter Lower Surface	Horizontal	28 mm	From under ET

*** End of Table 80-3 - Reduced Final Inspection Team Photos ***

*** End of Operation **80** ***

ET 01

12/4/01

OPERATION 90 LO_2/LH_2 Drain Monitoring

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **4.0**

NOTE

This operation is contingent upon progression of launch countdown and is performed after start of cryo (LO_2/LH_2) loading and subsequent launch scrub, FRF, or WCDDT.

Operation Not Performed: N/A

NOTE

This operation monitors the External Tank external surfaces during LO_2/LH_2 drain operations from time of detanking until 1.5 hours after LO_2/LH_2 low level sensors read dry via OTV 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171.

Noted requirements satisfied by this operation: OMRS S00E00.021

90-1 **Record** start date/time (GMT) of LH_2 and LO_2 Tank Drain.

LH_2 Drain Start Date ① 12-5-01 4-5- Time 0030 GMT

LO_2 Drain Start Date 12-4-01 Time 2309 GMT

ETM [signature] Date 12-9-01
W. RICHARDS II

① * EIE 12-5-01

ET 01
12/5/01

90-2 **CVM1 JTV1 223**

From start of LO_2 Tank Drain and LH_2 Tank Drain until respective LO_2/LH_2 low level sensors read dry, **monitor** ET external surfaces including LO_2 Feed Line, LH_2 Feed Line, LH_2 Recirculation Line, LH_2 Aft Dome and manhole covers, LH_2/LO_2 Umbilicals, TSM LH_2/LO_2 Umbilicals via OTV cameras. No cryogenic liquid or excessive vapors allowed.

ETM W. RICHARDS II Date 12-4-01

Support: COMM

90-3 **Record** date/time (GMT) when LO_2/LH_2 low level sensors read dry.

LH_2 Sensors Dry Date 12-5-01 Time 0150 GMT

LO_2 Sensors Dry Date 12-5-01 Time 0036 GMT

ETM W. RICHARDS II Date 12-4-01

ET 01
12/5/01

90-4 **CVM1 JTV1 223**

Monitor ET external surfaces including LO_2 Feed Line, LH_2 Feed Line, LH_2 Recirculation Line, LH_2 Aft Dome and manhole covers, LH_2/LO_2 Umbilicals, TSM LH_2/LO_2 Umbilicals via OTV cameras for 1.5 hours after LO_2/LH_2 low level sensors have read dry. No cryogenic liquid or excessive vapors allowed. Record date/time (GMT) when monitoring complete.

LH_2 Complete Date 12-5-01 Time ~~0206~~ 0320 (I) GMT

LO_2 Complete Date 12-5-01 Time 0206 GMT

ETM [signature] Date 12-9-01
W. RICHARDS II

Support: COMM

90-5 Completion of this operation satisfies noted requirements.

OMRSD S00E00.021 USA [illegible]

90-6 Operation - LO_2/LH_2 Drain Monitoring complete.

*** End of Operation **90** ***

[signature] 12-4-01

ET 01

12/5/01

OPERATION 100 Console Securing

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.5**

100-1

CTIF TBC 136
TBC CTC 232

OTV support for ET thermal protection system evaluation no longer required.

100-2

CTIF JYVR 138

Perform the following:

1. **Turn off** video recorders.
2. **Remove** tape cartridges.
3. OTV support no longer required.

Support: COMM

100-3

CTIF CVM1 222
CVM2

Secure consoles by setting all monitors to "Off" position.
Report completion.

ET
01
12/4/01

NOTE
Perform next step only after a successful launch.

100-4

CTIF

Remove photo processing laptop computer from Firing Room.

12-4-01
Not Performed: W. RICHARDS

100-5

CTIF	**TBC**	**136**
TBC	**CTC**	**232**

Firing Room 2, ice frost monitoring area securing complete.

100-6

Operation 100 - Console Securing complete.

ETM W. RICHARDS Date 12-4-01

*** End of Operation **100** ***

ET 01

12/4/01

OPERATION 110 Summary Tape

Shop: **SE**
Cntrl Rm Console: **FR2**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **18.0**

NOTE
Observations/concerns observed during count are typically recorded on the summary tape real-time (trouble tape).

110-1 **CICE**

After launch or launch scrub, prepare a summary tape to include observations/concerns noted during count.

110-2 Operation Summary Tape complete.

ETM R. Scale Date 12/4/01

*** End of Operation **110** ***

ET 01

12/5/01

OPERATION 120 Post Drain Walkdown

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **PAD A/B**
Hazard (Y/N): **Y**
Duration (Hrs): **2.0**

NOTE

Post drain walkdown performed only after start of cryo (LH_2/LO_2) loading and subsequent launch scrub.

Operation Not Performed: N/A

WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

Personnel shall wear **hardhats** and **flame retardant coveralls** while performing post drain walkdown.

NOTE

Post drain walkdown typically commences approximately 1.5 hours after LH_2/LO_2 low level sensors read dry.

Post drain walkdown performed in support of a 24 hour scrub turnaround is typically coincident with the L-20 hour pre-launch walkdown for the ensuing launch attempt.

ET 01

12/7/01

NOTE
NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are walkdown optional participants:

NASA Engr	(4)
SFOC Engr	(2)
LMSSC-LSS	(1)
Boeing LSS	(1)
SFOC Safety	(1)

120-1 NASA Lead ET Mechanical Systems Engineer (PH-H) verify essential personnel on station, properly attired, and ready to proceed with post drain walkdown.

Essential Personnel	
NASA Engineering (PH-H)	1
SFOC Engineering (ETM)	1

NOTE
"Hands-on Investigation" is applicable only to those areas which are not understood or fully defined and which cannot be adequately evaluated otherwise.

120-2 **Perform** post drain walkdown as follows:

1. **Visually inspect** ET TPS exterior surfaces after detanking and warm-up (approximately T + 4 hours after drain is initiated) from the MLP, FSS, and RSS as access permits.

2. **Perform** hands-on investigation of all areas suspected of violating Doc: NSTS 08303 (LI) NSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA (LI)

OMRSD S00E00.031

120-3 Walkdown complete. All discrepancies identified. No constraints to continue.

PH-H J. RIVERA Date 12/5/01

ETM W.R. RICHARDS II Date 12/5/01

120-4 Operation Post Drain Walkdown complete.

*** End of Operation **120** ***

ET 01
12/5/01

OPERATION 130 Post Launch Walkdown

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **PAD A/B**
Hazard (Y/N): **Y**
Duration (Hrs): **3.0**

NOTE

Do not perform this operation after launch scrub.

ET 01

Operation Not Performed: _____ 12/4/01

WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

Personnel participating in walkdown shall wear **hardhats** and **flame retardant coveralls .**

NOTE

NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are walkdown optional participants:

NASA Engr	(3)
SFOC Engr	(2)
LMSSC-LSS	(1)
Boeing LSS	(2)
SRB ELE	(1)
Thiokol-LSS	(1)
SFOC Safety	(1)

12/4/01

Pages 130-3 thru 130-5 removed op 130 VIP

ET 01

12/4/01

130-1 NASA (PH-H) **verify** following personnel on station, properly attired, and ready to proceed with post launch walkdown.

Essential Personnel		
NASA	PH-H	1
SFOC	ETM	1

NOTE

Post Launch Walkdown must be performed prior to washdown and Pad being opened for normal work.

130-2 **Perform** Post Launch Walkdown as follows:

1. Ref Table 130-1, **visually inspect** post launch pad/area to identify any lost flight or ground systems hardware and debris sources.

2. Ref Table 130-2, **document/SIMS photograph** launch PAD area configuration.

   Description: Post Launch Walkdown

   OMRSD S00U00.010-1

130-3 Walkdown complete. Debris sources and lost flight hardware identified. No constraints to continue.

PH-H _____ Date _____

ETM _____ Date _____

130-4 Operation - Post Launch Walkdown complete.

OPERATION 140 Film Review

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **15.0**

NOTE
This operation may be not performed after launch scrub.

Operation 140 Not Performed: ET 01 12/4/01

NOTE
Analysis of Pad Debris Inspection Results determines priority for film review. All critical film (as determined by the Debris Team) must be reviewed as soon as possible after launch and no later than 36 hours prior to entry (of the Orbiter into the earth's atmosphere).

140-1 **Review** and **analyze** all engineering launch (and flight) film to:

- Identify any debris damage to the SSV
- Identify flight vehicle or ground system damage that could affect Orbiter flight operations of future SSV launches.

OMRSD S00U00.011-1

ETM N/A Date N/A

140-2 Operation - Film Review complete.

ETM N/A Date N/A

*** End of Operation **140** ***

ET 01 12/4/01

OPERATION 145 IR Camera Removal

Shop: **PH-H**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **2.0**

WARNING

Hard hats required on the Pad when SSV is not present.

CAUTION

Exercise care to avoid dropping equipment, fasteners, etc from RSS roof to prevent damage to equipment or injury to personnel. All tools must be tethered.

NOTE

IR Camera removal from RSS Roof site may be not performed in launch scrub turnaround scenarios.

145-1 **Remove** IR camera at RSS Roof Site as follows.

1. **Remove** fasteners (2 pl) from camera housing front. **Retain** fasteners for reinstallation when front cover is installed.

2. **Install** camera housing front cover using previously removed fasteners (2 pl). **Tighten** fasteners (2 pl) wrench tight.

ET 01

2/4/01

WARNING

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

CAUTION

Do NOT allow back cover to exert undue force on cables when opening/rotating back cover.

3. **Rotate** camera housing back cover into open position by removing bolts with flat washers (20 pl). **Retain** bolts/washers for reinstalllation.

4. **Disconnect:**
   - Power cable
   - Pan & tilt cable
   - Controller cable
   - OTV coaxial cable

5. **Unlock** spring pin at lower, left to release IR camera Unit in camera housing. **Remove** IR Camera Unit from camera housing by carefully sliding it out the back opening of the camera housing. **Support** IR Camera Unit during removal.

6. **Rotate** camera housing back cover into closed position. Do not pinch cables. **Secure** back cover by reinstalling bolts/flat washers (20 pl). **Tighten** bolts wrench tight.

ET
01
12/4/a

WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Ensure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear **N-Dex nitril gloves** and **chemical splash goggles** . When working at eye level or above wear a **face shield** over goggles.

WS002.a 05-22-01

7. **Clean** IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl alcohol .

8. **Route** IR Camera Unit to VAB 3K1 for refurb/checkout.

NASA PH-H N/A Date N/A

USA ETM N/A Date N/A

Not Performed: ET 01 12/4/01

ET 01 12/4/01

NOTE

IR Camera removal from Camera Site 2 may be not performed in launch scrub turnaround scenarios.

145-2 **Remove** IR camera from Camera Site 2 as follows.

1. **Remove** bolt(s) from camera housing front. **Retain** bolt(s) for reinstallation when front cover is installed.

2. **Install** camera housing front cover using previously removed bolt(s). **Tighten** bolt(s) wrench tight.

WARNING

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

CAUTION

Do NOT allow back cover to exert undue force on cables when opening/rotating back cover.

3. **Loosen** screws (8 pl) securing camera housing back cover using Phillips screwdriver. **Rotate** camera housing back cover to open position. **Retain** bolts/washers for reinstallation.

4. **Disconnect:**
   - Power cable
   - Pan & tilt cable
   - Controller cable (2 pl)
   - OTV coaxial cable

5. **Unscrew** set screw(s) at lower, left/right to release IR camera Unit in camera housing. **Remove** IR camera Unit from camera housing by carefully sliding it out the back opening of the camera housing. **Support** IR camera Unit during removal.

6. **Coat** camera housing back cover O-ring with a single coat of (1) tube/jar 6505-00-133-8025 Petroleum Jelly, Vaseline (or equivalent) .

7. **Rotate** camera housing back cover into closed position. Do not pinch cables. **Secure** back cover by installing screws (8 pl). **Tighten** screws wrench tight using Phillips screwdriver.

WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Ensure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear **N-Dex nitril gloves** and **chemical splash goggles** . When working at eye level or above wear a **face shield** over goggles.

WS002.a 05-22-01

8. **Clean** IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl alcohol .

9. **Route** IR Camera Unit to VAB 3K1 for refurb/checkout.

NASA PH-H N/A Date N/A

USA ETM N/A Date N/A

Not Performed: ET 01 12/4/01

*** End of Operation **145** ***

ET 01 12/4/01

OPERATION 150 Final Report

Shop: **SE**
Cntrl Rm Console: **NA**
OPR: **ETM**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.5**

NOTE
This operation may be not performed after launch scrub.

Operation 150 Not Performed: ET 01 12/4/01

150-1 Assemble final report by attaching following reports to this OMI. Reference each to this step.

Post Launch PAD Assessment
SRB Assessment
Launch Film Review
Launch Day Video Review
Orbiter Landing Assessment
ET Separation Review

150-2 Final report assembly complete.

ETM N/A Date N/A

150-3 Operation - Final Report complete.

*** End of Operation **150** ***

ET 01 12/4/01

```
*************************************************
*                                               *
*        PROGRAM PRA120 SELECTION CRITERIA      *
* --------------------------------------------- *
*                                               *
*        RPT TYPE: IPR                          *
*                                               *
*        PR GROUP:                              *
*                                               *
*    WORK AREA CD:                              *
*                                               *
*      PR ELEM CD:                              *
*                                               *
*          STS NO:                              *
*                                               *
* Starting RPT DT: 12/05/01                     *
*                                               *
*   Ending RPT DT: 12/11/01                     *
*                                               *
*  LRU or Non-LRU: B                            *
*                                               *
*    PRACA EFF CD:                              *
*                                               *
*            EICN:                              *
*                                               *
*      RPT STATUS: OP                           *
*                                               *
* DETECTED DURING: S6444                        *
*                                               *
* --------------------------------------------- *
* Sorted by DETECTED DURING, PR ELEM CD, and EICN *
*                                               *
*************************************************
```

DATE: ˑˑ ˑˑ1/01 08:14
REPOR˜ : PRA1200A

PROBLEM REPORTING AND CORR˜ ˜E ACTION SYSTEM
PROBLEMS BY DETE(˜JRING

PAGE:

DETECTED DURING: S6444 FILM REVIEW(STS105
WORK AREA CD: PAD-A
WORK AREA LOC:
WORK AREA ZONE:
PART PROG NO:
PART PROG NM:
FUNCT CRIT:
HW CRIT:
SERIAL REV NO:
REPL SER NO:
FINAL ACPT DT:
TECH STAMP:
GOVT STAMP:
GOVT CD:
CONTR STAMP:
CONTR CD:
VALIDATOR ID/NM:

VALIDATOR DT:

RPT NO: IV-6-381703
CONSTRAINTS: YES
CONSTRAINTS TO: S0007VL2
HAZARD OP CD:
HAZARD OP:
QTY/UNITS: 0
RPTED BY ID/NM: T08011 SEALE, RANDALL D
RPT BY ORG/DEPT: USA 53910
RPTED BY PH: (321)861-3348
RPT DT/TM: 12/10/01 09.01
DATA CODE:
FSCM NO/NM:
NHA PN TDID:
RSPBL ORG: ETM
RC ACTION REQ:
RC CONSTRAINT TO:
RC CONSTRAINT DT:
RC CONSTR ID/NM:

RC CLOSURE ID/NM:

RC CLOSURE ID/NM:

EICN: PADA-2209
STS EFF: 000 G GSE
WORK UNIT CD:
ENG CHNG REQ:
MR REQ:
WEIGHT REQ:
RETEST REQ:
TIME CYCLE:
CRIT SKILLS:
FRACTURE CRIT:

SOFTWARE PROB DT/TM:

SYS RESTD DT:
SYS REST ID/NM:

TPD CAUSE:

RC CLOSURE DT:

RC CLOSURE DT:

RELATED RPTS:

DESCRIPTION:

ITEM	PAGE	
1	1	POST LAUNCH FILM ANALYSIS OF FILM E-18 SHOWS A CYLINDRICAL SHAPED OBJECT COMING INTO VIEW AT 21:10:15.643 GMT BEST ESTIMATE OF OBJECT IS THAT IT IS A 3"L X .75" DIA FACILITY BOLT

NOT APPLICABLE FOR PAD B

DEC 1 1 01

****
* TOTAL ELEMENTS DETECTED DURING: S6444 FILM REVIEW(STS105 = 1 *
* TOTAL DETECTED DURINGS FOR THIS REPORT = 1 *
****

****
* END OF REPORT *
****